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Claims

1. Process for the preparation of a steel surface for hot-dip galvanising in a zinc based molten bath, comprising the steps of cleaning the surface by either one of electrocleaning, ultrasonic cleaning and brush cleaning, pickling the surface, and applying a protective layer to the surface by immersion in a flux solution, characterised in that
- 5 the cleaning is performed to a level of less than  $0.6 \mu\text{g}/\text{cm}^2$  residual dirt, and
- 10 the flux solution comprises a soluble bismuth compound
2. Process according to claim 1, characterised in that the
- 15 cleaning is performed by electrocleaning, whereby at least  $25 \text{ C}/\text{dm}^2$  is passed through the steel surface
3. Process according to claim 1, characterised in that the
- 20 pickling is performed by either one of electropickling, ultrasonic pickling and ion exchange pickling using an  $\text{Fe(III)}$  chloride solution
4. Process according to claims 1 to 3, characterised in that the soluble bismuth compound is an oxide, a chloride or a hydroxychloride
- 25 5. Process according to claims 1 to 4 characterised in that the flux is an aqueous solution comprising between 0.3 and 2 wt% of bismuth
6. Process according to claims 1 to 5 characterised in that the
- 30 flux solution further comprises at least 7 wt% of  $\text{NH}_4\text{Cl}$
7. Process according to claim 6 characterised in that the flux solution comprises between 8 and 12 wt% of  $\text{NH}_4\text{Cl}$
- 35 8. Process according to claims 6 or 7, characterised in that the flux solution further comprises between 15 and 35 wt% of  $\text{ZnCl}_2$

ART 2.2.2.2.2

9. Process for single-dip galvanising of steel using an aluminium containing molten zinc baths, whereby the steel surface is prepared according to claims 1 to 8
- 5 10. Process according to claim 9, whereby the aluminium containing zinc bath further contains at least 0.15 % Al, and preferentially between 2 and 8 wt% Al
- 10 11. Process according to claim 10 whereby the aluminium containing zinc bath is a Galfan bath
12. Process according to claims 1 to 11, characterised in that the steel is in the form of a continuous product
- 15 13. Process according to claim 12, characterised in that the continuous product is steel wire, tube or plate